Photo by U.S Forest Service

DOUGLAS FIR PLYWOOD

DOUGLAS FIR PLYWOOD ASSOCIATION

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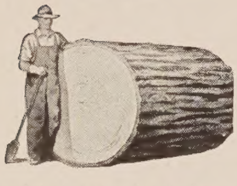
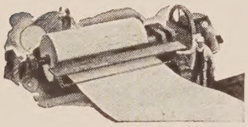
Tacoma Building, Tacoma, Washington

How Douglas Fir Plywood Is Made

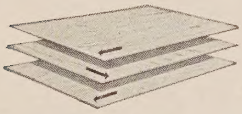
REAL LUMBER
Engineered for greater size and strength



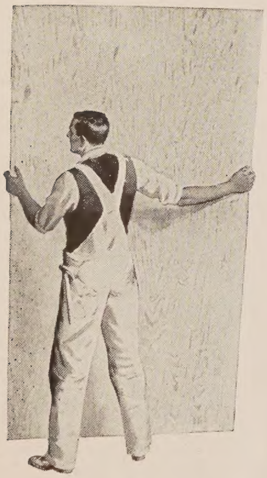
1 Selected Douglas fir logs are cut to length and barked.



2 Then turned on a giant lathe and peeled off into endless lengths of thin wood sheets.



3 These sheets of wood are cut to size, laid cross-grain, and glued together flat with water-resistant glue under hydraulic pressure. (Arrows show direction of grain.)



4 The result is giant panels having all the good qualities of natural wood plus size and convenience,—but with advantages of strength, stiffness, and freedom-from-splitting.

☆ THE ASSOCIATION ☆

A non-profit organization of United States manufacturers of Douglas fir plywood, founded to sponsor a continuing program of technical research, to promote the use of this material in construction and industry, and to help users employ it to the best advantage.

Inquiries as to the characteristics or uses of Douglas fir plywood will receive prompt attention. Address Douglas Fir Plywood Association, Tacoma Bldg., Tacoma, Wash., or any of the following industry mills:

ABERDEEN PLYWOOD COMPANY
Aberdeen, Washington

BUFFELEN LUMBER & MFG. CO.
Tacoma, Washington

ELLIOTT BAY MILL COMPANY
Seattle, Washington

HARBOR PLYWOOD CORPORATION
Hoquiam, Washington

M & M PLYWOOD CORPORATION
Portland, Oregon

NORTHWEST DOOR CO.
Tacoma, Washington

OLYMPIA VENEER COMPANY, INC.
Olympia, Washington

OREGON-WASHINGTON PLYWOOD CO.
Tacoma, Washington

PACIFIC PLYWOOD CORPORATION
Willamina, Oregon

ROBINSON MANUFACTURING CO.
Everett, Washington

SMITH WOOD-PRODUCTS, INC.
Coquille, Oregon

UNITED STATES PLYWOOD CORP.
Seattle, Washington

VANCOUVER PLYWOOD & VENEER CO.
Vancouver, Washington

WASHINGTON VENEER COMPANY
Olympia, Washington

WEST COAST PLYWOOD CO.
Aberdeen, Washington

WHEELER OSGOOD SALES CORP.
Tacoma, Washington

☆ THE PRODUCT ☆

Douglas fir plywood consists of an odd number of thin sheets, or veneers, of selected old growth Douglas fir—3, 5, or 7 in standard thicknesses—these being laminated with alternating grain direction. The major processes of manufacture are illustrated on this page.

The water-resistant glue used, after setting under hydraulic pressure, forms a bond of high shear strength, far stronger, in fact, than the wood fibres themselves.

In the manufacture of Douglas fir plywood only the choicest Douglas fir logs are used. Douglas fir grows on the Pacific slope, where climatic conditions produce a wood combining soft texture and light weight with extraordinary strength. Because of these characteristics, Douglas fir is widely specified for heavy structural timbers.

☆ PHYSICAL CHARACTERISTICS ☆

Because the veneers are rotary cut, not sawn, Douglas fir plywood is available in standard sizes as large as 4 x 8 ft.—and in even larger sizes on special order. Largely because of these sizes, Douglas fir plywood makes possible savings of 40% to 75% over ordinary lumber in handling and labor cost.

Because the grain of each ply composing the material is at right angles to the grain of adjacent plies, the strength of a Douglas fir plywood panel is approximately equal in both directions. By contrast, the tensile strength of ordinary lumber may be twenty times as high parallel to the grain as across it and the modulus of elasticity from fifteen to twenty times as high. Therefore, a panel of Douglas fir plywood will do the work of solid lumber very much thicker and heavier.

On account of its cross lamination, Douglas fir plywood has no plane of cleavage. Hence, although it is possible to smash the edge of a panel with a heavy axe, it cannot be split.

As each veneer, or ply, is scientifically dried before the gluing process, and as any tendency of an individual ply to shrink or expand is prevented by the opposing grain of adjacent plies, Douglas fir plywood is extraordinarily warp-resistant. Once in place, it is warp-proof. Moreover, nails and screws can be driven to the very edge.

A grade and thickness of Douglas fir plywood suitable for virtually every purpose is now available (see following pages for complete descriptions). It can be obtained through lumber and building material dealers in every section of the country, but if unavailable in any particular community, a letter to any of the mills listed on this page will bring the name of their nearest dealer. All Douglas fir plywood from Association mills is now made to conform with the new moisture-resistance requirements set forth in the revised standards established by the National Bureau of Standards and promulgated on November 10, 1938 as U. S. Commercial Standard 45-38.

Simultaneous with the promulgation of the Standard, registered grade-marks and trademarks for all standard panels were adopted by the Douglas Fir Plywood Association mills. The grade-marks have been trademarked and are as follows:

1. The word "Plywall" appears in a square stamp on the back of every genuine panel of Douglas fir plywood wallboard grade. (See pages 4 and 5.)
2. The word "Plypanel-dfpa" appears on the edge of every genuine panel grade of Douglas fir plywood, including the subclassifications known as Good 2-Sides, Good 1-Side and Sound 2-Sides. (See pages 6 and 7.)
3. The word "Plyscord" appears in a circular stamp on the face of every panel of genuine Douglas fir plywood sheathing grade. Plyscord will also be stamped in parallel lines 16 in. apart across the face for convenience in nailing. (See pages 8 and 9.)
4. The word "Plyform" appears in a diamond-shaped stamp on one face of every panel of genuine Douglas fir plywood concrete form panel grade. The edges of all panels are also sealed with a distinctive silver-green paint for ready identification. (See pages 10 and 11.)
5. The word "Ext-dfpa" appears on the edge of every panel of genuine Exterior type Douglas fir plywood, suitable for permanent exterior service. (See pages 12 and 13.)

These grade-marks and trade-marks are designed to protect the purchaser of plywood and to assure him that he will always receive the exact grade he specifies.

☆ FHA ACCEPTANCES ☆

Plywood, not less than ¼ in. thick, over studs spaced 16 in. on centers, has been accepted by the FHA in their general ruling No. 67, June, 1937. This item in the wallboard grade is most widely used for walls and ceilings, although for more substantial construction ⅜ in. or even thicker is sometimes preferred.

The sheathing grade of plywood, not less than 5/16 in. in thickness and securely nailed to studs 16 in. on centers is acceptable for wall sheathing in Revised General Ruling No. 61, June, 1937. This ruling also accepts sheathing grade plywood for roof sheathing and ⅝-in. sheathing grade for subflooring when applied according to specifications.

Following promulgation of the grade-marking program in November, 1938, the FHA accepted Exterior plywood when applied on construction otherwise approved.

Plywood sheathing 5/16 in. thick and plywood subfloors are permissible under the Uniform Building Code of the Pacific Coast, already adopted by more than 250 cities and counties throughout the nation.

TABLE OF DOUGLAS FIR PLYWOOD STANDARD SIZES

Item	Widths	Lengths	Thicknesses
Standard Panels (PLYPANEL)	From 12″, increasing by 2-in. units to 30″; also 36″, 42″, and 48″	48″, 60″, 72″, 84″, and 96″	3/16″ (3-ply sanded 2 sides) increasing by 1/16″ thicknesses to 1 3/16″ (7-ply)
Wallboard (PLYWALL)	48″	60″, 72″, 84″, and 96″	¼″, ⅜″ 3-ply sanded 2 sides; and ½″ 5-ply sanded 2 sides
Sheathing (PLYSCORD)	32″ and 48″	96″	5/16″ and ⅜″ 3-ply, ½″ 3-ply or 5-ply, and ⅝″ 3-ply and 5-ply, all unsanded
Concrete Form Panels (PLYFORM)	Same as shown for PLYPANEL	Same as shown for PLYPANEL	¼″, ½″, 9/16″, ⅝″, 11/16″ or ¾″
Exterior Type (EXT-DFPA)	Same as shown for PLYPANEL	Same as shown for PLYPANEL	Same as shown for PLYPANEL

Douglas Fir Plywood Grades

(See U. S. Commercial Standard, CS45-38)

Good Two Sides (G-2-S)—This grade is intended for natural or light stain finishes. Both faces are clear and 100% heartwood of a yellow or pinkish color.

Good One Side (G-1-S)—One face is the same as that described under Good Two Sides grade, while the opposite face is the same as the Sound Two Sides grade described below.

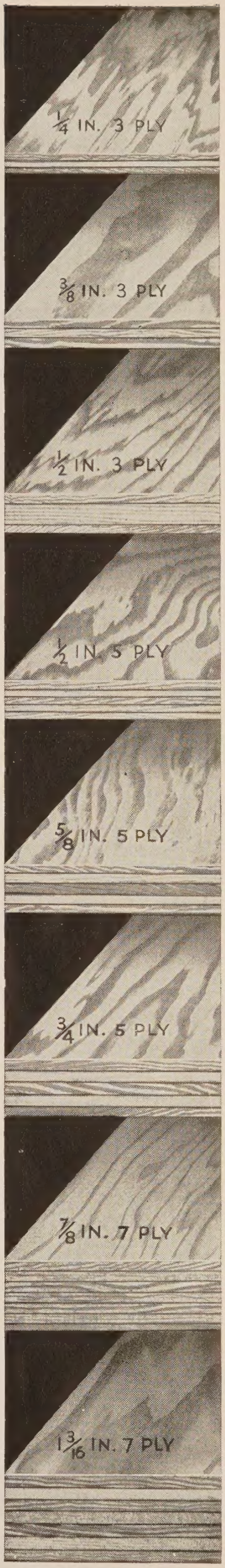
Sound Two Sides (SO-2-S)—This grade presents a smooth, sound surface on both sides suitable for painting. The faces may be of one or more pieces of firm, smoothly cut veneer. If of more than one piece, they will be well joined and reasonably matched for grain and color at the joints. Sap and natural discoloration are considered no defect.

Wallboard (Plywall)—The face side is the same as described under Sound Two Sides. The opposite side contains defects in number and size that will not affect the strength or serviceability of the panel.

Sheathing (Plyscord)—Both sides of this 5/16-in., ⅜-in. and ⅝-in. unsanded plywood contain defects which will not seriously affect strength or serviceability, but one face is made tight by patching.

Concrete Form Material (Plyform)—(Made in standard panel dimensions with special highly water-resistant glue). ⅝-in. thickness is recommended for most form jobs, but ½, 9/16, 11/16 and ¾-in. panels are stocked in standard panel widths and lengths. Both faces are carefully selected and are similar to those in Sound Two Sides panels, but must be at least ⅛″ thick before sanding. Panels are distinctively edge-sealed and mill-oiled. Panels ¼ in. thick are available as form liners and for curved surfaces.

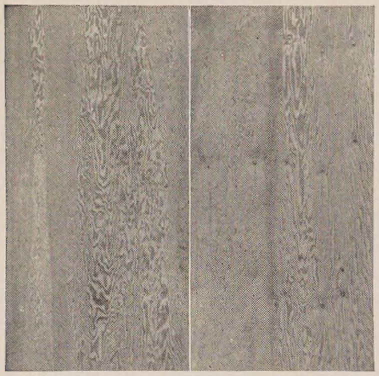
Exterior (EXT-DFPA)—This class of panel made in various grades and with waterproof glue is suitable for permanent exterior exposures.



Plies and thicknesses of Douglas fir plywood

☆ PLYWALL ☆

TRADE MARK REG. U.S. PAT. OFF.



(Left) Typical PlyWall face which is smooth and free from knots, splits, checks or pitch pockets. (Right) Typical PlyWall back which contains sufficient defects as to render it unfit for patching

GENUINE
PLYWALL
TRADE MARK REG. U.S. PAT. OFF.
Douglas Fir Plywood
WALLBOARD
D. F. P. A.
INSPECTED

This square stamp appears on the back of all genuine PlyWall panels

PlyWall is the standard Wallboard grade of Douglas Fir Plywood, in strict accordance with U. S. Commercial Standard CS45-38.

PlyWall has a "sound" face and a "utility" back. The face is suitable for natural or stained finishes and, of course, for painting or papering.

All face blemishes are cut out in the manufacturing process and replaced with perfectly fitted patches that blend with the grain of the panel so as to be obscure and generally unnoticeable, even in clear, natural finishes.

The new technique in finishing makes PlyWall a panel of high quality suitable for any type of residence from mansion to cottage.

PlyWall is air-tight and consequently produces true dead air spaces within the walls it covers, adding materially to the insulation value of the walls and to the comfort of the home's occupants.

PlyWall, with two coats of asphalt paint on the back, becomes one of the most effective vapor barriers known (see Government test results, page 14).

Sizes—PlyWall comes in one standard size, 48 x 96 in., and in thicknesses of ¼, ⅜, and ½ in.

Chief Uses—(In construction.) Wall and ceiling panels, partitions; cabinets, built-ins, cupboard doors; base for wallpaper and felt; underlay for resilient flooring.

Advantages—

1. Dri-Bilt walls.
2. Attractiveness and variety of finishes.
3. Air-tight, comfort-giving paneling.
4. Great rigidity and durability.
5. Superior acoustical properties (see page 14).

Application—The 4 x 8-ft. PlyWall can be applied either vertically or horizontally with attractive and satisfactory results.

PlyWall, ¼ in. thick, is suitable for use over studs 16 in. on centers, although ⅜ in. is recommended for the highest type of construction.

Nailing—4d finish or casing nails about 6 in. apart are commonly used for ¼-in. panels, while 6d nails are used for ⅜ in.

Most building codes require that frame walls have a 2 x 4-in. firestop cut in between studs about 4 ft. from the floor. These 2 x 4's serve also as backing for the panels, and are recommended.

Joints—These may be butted flush, V-grooved, covered with a molding, or have a molding inserted.

A smooth flush joint may be formed by nailing strips to the framework, covering these with a casein glue and then butting the panels over these glued strips, using nails 6 in. apart to exert required pressure on the glue.

There are several varieties of this. In the Uniwall joint (developed by I. F. Laucks, Inc., see their catalog for further details) plywood "furstix," ¼ x 2½ in., are cut from the width of a 4 x 8-in. panel and nailed to all studs, headers, and plates. Panels are then glued to these.

Another method involves ripping ¼ in. from the stud at the joint, and then applying a ¼ x 2½-in. gusset or furring strip and gluing as above. Finally, in the "de luxe" wall, furring strips of proper thickness, and about 3 in. wide are nailed horizontally on 2-ft. centers. PlyWall panels are also applied (glued) horizontally, with the joint over one of the strips.

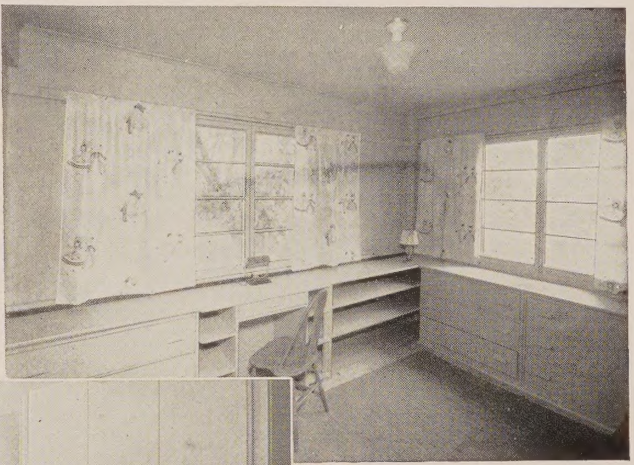
V-grooves are made easily with a plane at the time of installing the panels.

Electric portable routers can be used for various groovings and designs, both at joints and over the entire panel.

Moldings—Can be applied to obtain horizontal streamlined effects, or a variety of paneled designs (see page 7).

Overlays—Lapping of panels is effective in many cases, particularly for ceilings. Edges of panels are purposely left exposed.

Attractively finished plywood panels formed the walls and ceilings of this room



The Plywall walls of this living room were given a priming coat, a second coat and a finishing coat of eggshell white

PlyWall is an ideal base for wallpaper in Dri-Bilt homes

Wallpaper Over Plywood—Panels should be closely butted and joints filled with Swedish putty. Then they should be coated with a wheat flour paste to which has been added a gelatin glue size. Over the plywood, apply a layer of ¾ lb. deadening or lining felt treated with the same paste and size. The felt should be butted neatly at the joints, rolled and smoothed.

For highest type of job, many decorators use a canvas or sheeting in lieu of felt over the plywood.

Finally, the wallpaper is hung in accordance with standard practice, using ordinary wheat flour paste.

☆ DRI-BILT WITH PLYWOOD CONSTRUCTION ☆

Dri-Bilt with Plywood is the name used to describe an improved type of construction that develops speed and economy and utilizes conventional materials stocked by lumber dealers throughout the country.

Dri-Bilt means dry-wall construction, i.e., the elimination of hundreds of gallons of water—and its attendant evils—during plastering operations in house building. The Dri-Bilt with Plywood method employs standard lumber framing and large, rigid panels of Douglas fir plywood for interior walls and ceilings. For additional structural superiority (see chart page 9) plywood is used for sheathing walls and roofs, as well as for the subflooring.

Advantages—

1. Excessive moisture is eliminated, reducing danger of twisting of studs and joists.
2. Plywood walls are puncture-proof and crack-proof, thereby lowering maintenance costs.
3. Plywood walls may be given natural or light stain finishes for genuine wood paneling, or they may be felted and papered, covered with plastic finishes, bathroom tile, linoleum or painted.
4. Dri-Bilt methods save on building time operations often as much as 4 to 6 weeks, lowering finance charges, increasing turnover of builders' invested capital and allowing the client to move into a new home sooner.

Procedure—

GENUINE
PLYWALL
TRADE MARK REG. U. S. PAT. OFF.
Douglas Fir Plywood
WALLBOARD
D. F. P. A.
INSPECTED

WALL SHEATHING (Under any finish siding)—The PlyScord grade $\frac{5}{16}$ in. thick, is used over the studs.

FRAME—Standard lumber framing with studs and joists 16 in. on center. Framing lumber should be kiln-dried to prevent later twisting of frames.

ROOF SHEATHING (Under any finish roofing)—Use $\frac{5}{16}$, ⅜, ½ or ⅝-in. PlyScord, depending on rafter spacing and anticipated snow loads (see recommended thicknesses on page 8).

SUB-FLOORS (Under any finish flooring)—Use ½ or ⅝-in. PlyScord.

NAILING—The $\frac{5}{16}$ or ⅜-in. PlyScord is applied with 6d common nails spaced 6 in. apart at edges and 12 in. elsewhere. With ⅝-in. PlyScord, use 8d nails, similarly spaced. Exterior plywood should be applied with non-corrosive nails.

INTERIORS—Use ¼ or ⅜-in. PlyWall, the popular wallboard grade for most purposes, particularly for painted or papered walls. The PlyPanel grade (Good 1-Side) is used when the finest appearance is desired with clear, one-piece veneers.

EXTERIORS—Exterior type should be specified for outside walls of plywood panels or plywood siding. Thicknesses used should be ⅜ in. or greater.

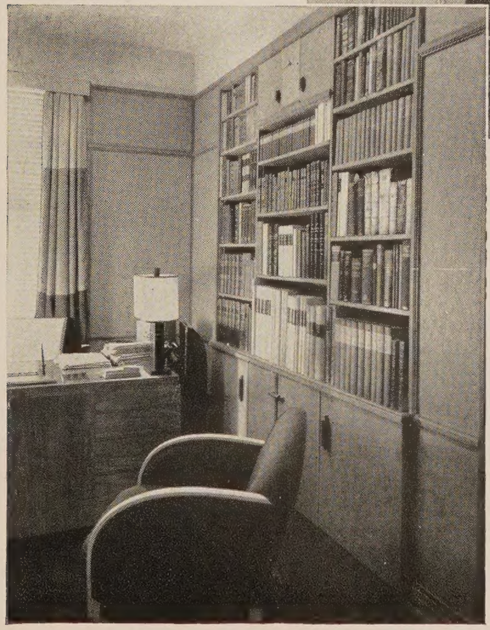
Suggestions—The standard panel widths of 48 in. and also 32 in., as well as the popular 8-ft. length, are multiples of 16 in., the accepted spacing for studs and joists. Consequently edges of panels will naturally meet at centers of studs and joists when spacing is regular.

By spotting window and door openings between grid lines, i.e., within 4-ft. panels, only one panel instead of two need be cut. This permits all headers through the house to have same length, allowing quick, economical cutting.

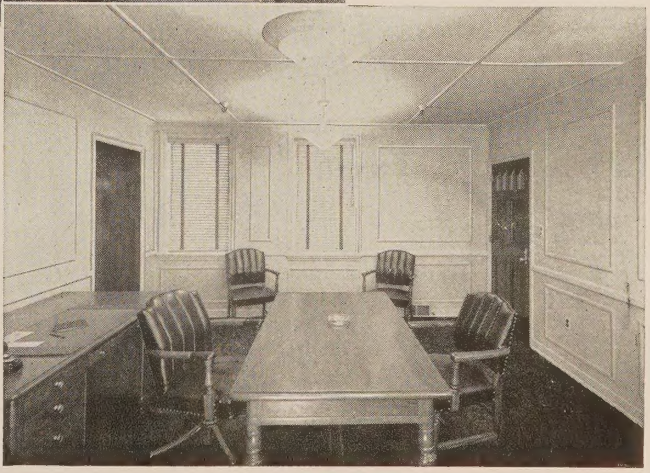
Furthermore, the extra cost of jogs and offsets in a floor plan can be minimized if the face of the wall comes at a grid line.

Grid lines at inside face of walls are desirable when interiors are Dri-Bilt with Plywood since 4 x 8-ft. panels will cover walls and ceilings with little or no cutting.

H. Roy Kelley, A.I.A., used PlyWall on the walls of this living room



PlyWall walls of this office were given a light stain, retaining the natural beauty of the wood

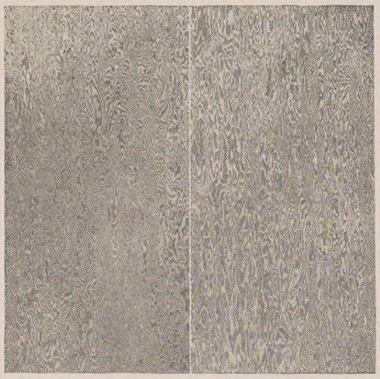


The walls and ceilings shown above are Douglas fir plywood attractively painted

TRADE MARK

☆ PLYPANEL ☆

REG U S PAT OFF PEND



Typical of PlyPanel Good 2-Sides. Each face is clear, all-heart, Douglas fir in a single sheet of veneer. PlyPanel Good 1-Side will have a face as above, with a back similar to the face of PlyWall. PlyPanel Sound 2-Sides will have both the face and back similar to the face of PlyWall

PLYPANEL D.F.P.A.

These letters are edge-branded on all genuine PlyPanel panels

This classification embraces the three standard panel grades of Douglas Fir Plywood, namely, Good 2 Sides, Good 1 Side, and Sound 2 Sides. It conforms to the requirements, including moisture resistance, of U. S. Commercial Standard CS45-38.

Sizes—PlyPanels are available in stock lengths of 4, 5, 6, 7 and 8 ft.; and in widths of 12 to 30 in. (in even 2-in. increments), also 30, 36, 42 and 48 in.

Thicknesses—From $\frac{3}{16}$ to $1\frac{3}{16}$ in. (After mill-sanding.)

Grade Description—A Good face, in a plywood panel, is practically clear, all-heart veneer, and must be in one single piece, even on a 48 x 96-in. panel. It is the highest quality obtainable.

A Sound face is smooth and suitable for painting or natural finish. It may consist of 2 or more perfectly jointed longitudinal pieces, and may contain several neatly made, obscure patches (where a knot or pitch pocket has been cut out), stain and sapwood. It is ideal for most wall and ceiling jobs.

Good 2 Sides (G2S) panels have two good faces. This is the best appearance grade available where *both* sides are to be exposed to view.

Good 1 Side (G1S) panels have a good face and a sound back.

Sound 2 Sides (So.2S) panels have two sound faces.

Each of these grades carries the Association grade-mark, "PlyPanel" on the edge of the panel.

Chief Uses—

Good 2 Sides PlyPanel—For highest quality of interior work in natural or stain finishes where both sides of the panel will be exposed. Booth partitions and cabinet doors are typical uses.

Good 1 Side PlyPanel—For high quality of interior work in natural or stain finish, where one side only is exposed, or where presence of obscure patches, etc., permitted in the sound back will not be objectionable.

Sound 2 Sides PlyPanel—For good quality of interior work, where both faces are to be exposed. Each face of this grade is equivalent in quality to the face of the popular PlyWall (wallboard) grade.

Application thicknesses to use and Joints are the same as for PlyWall, on walls and ceilings. For cabinet and cupboard doors, a ¾-in. thickness is preferable, although ⅝ in. is widely used.

Finishing of Douglas Fir Plywood—Simple, yet attractive finishes over PlyWall and PlyPanel, have recently been developed. The procedure here is to subdue the grain contrasts, yet preserve the natural beauty of the wood. Any variation in color scheme is possible, ranging from the strong, vivid blues and greens to the softer pastel shades.

These finishes are accomplished by a procedure which is basically as follows:

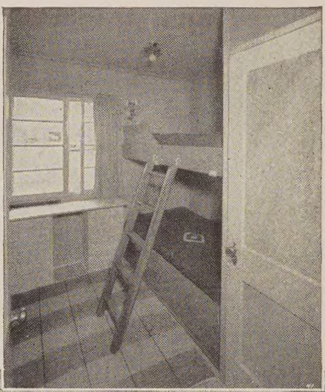
1. A coat of interior white undercoater, preferably thinned as follows: 6 lbs. of flat undercoat, 3½ qts. of pure turpentine and 1 qt. of linseed oil. When dry, sand lightly with No. 000 sandpaper.
2. One coat of white shellac, steel-wooled when dry with No. 1 wool. (This shellac coat may be omitted when greater penetration by the color coat is desired. This would give a more vivid color.)
3. One coat of the desired color in blending oils, applied thinly and wiped or dry-brushed to the proper color tone.
4. One coat of flat varnish. For best effect the varnish coat should be steel-wooled.

A limitless variety of effects can be secured by changing the color coat. Desirable tints and shades may be obtained by blending flat enamels according to proportions which will be suggested by decorators and painters. Skilled decorators will find it possible to compound effective colors, using white lead and colors in oil as, for example, the three following formulæ which have attained wide acceptance:

CALIFORNIA GOLD

1 oz. medium chrome yellow
½ oz. chrome yellow
1 oz. yellow ochre
8 oz. turpentine
1 oz. linseed oil

Wipe with rags and blend with dry brush.



For walls of finest appearance, PlyPanel is usually preferred

PlyPanel is widely used for built-ins, including cupboards, book-cases and shelving

PALM GREEN

1 Flat undercoat
¼ oz. medium chrome green
¼ oz. raw umber
¼ oz. lamp black
1 pt. turpentine
2 oz. linseed oil

Wipe with rags and blend with dry brush.

PADRE BROWN

12 oz. Flat undercoat
2 oz. Burnt umber
0 oz. French ochre
3 oz. Van Dyke brown
26 oz. turpentine
4 oz. linseed oil

Wipe with rags and blend with dry brush.

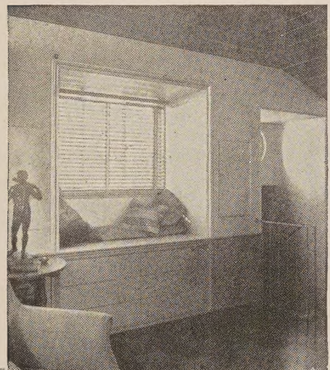
Economical Dri-Bilt Finishes—An inexpensive, but attractive, finish can be obtained with a single coat of interior white undercoater pigmented to the desired tint and thinned sufficiently so that the figure of the wood will show through. A second coat of clear shellac or varnish will add to the durability of this finish and give a deep lustre.

An economical stain finish which gives attractive results is marketed by a number of manufacturers and consists of a combination of stain and wax. These can be obtained in a number of pastel shades under such trade names as Waxtane, Minwax, and others.

Where Douglas Fir Plywood is to be stained, panels should be sealed with a clear, resin sealer. Steps to produce a stained finish are as follows:

FLAT STAIN	GLOSS STAIN	LACQUER
Stain	Stain	Stain
Coat of Shellac	Shellac	Lacquer sealer
Sand	Sand	Clear Lacquer
Flat Varnish	Gloss Varnish	(Flat or Gloss)

To retain the natural appearance of plywood, the procedure would be to give one coat of white shellac and another coat of dull varnish, which should be steel wooled. It is desirable, although not necessary, to rub the surface with furniture wax.



PlyPanel Good 1-Side formed the walls of this study. Architect, Ralph C. Flewelling

PLYPANEL D.F.P.A.

Enameled Walls—The very best possible results may be obtained by first covering the smooth Plywall walls with an inexpensive unbleached muslin.

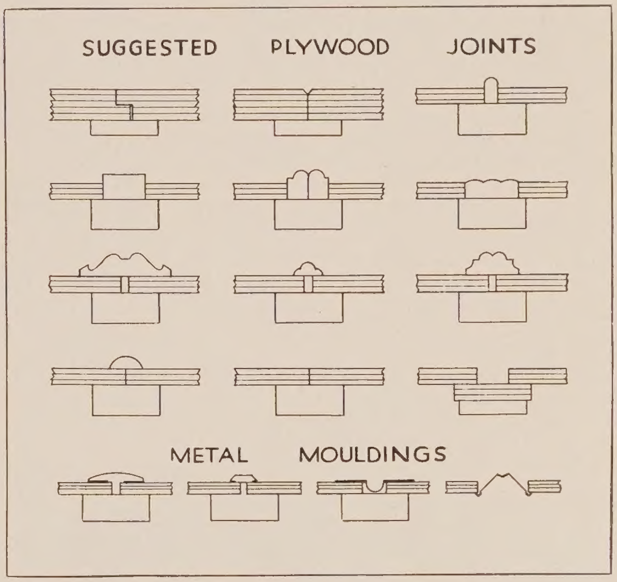
Fill nail holes or hammer marks and joints with Swedish putty, using plasterer's trowel.

Prime wood with thin flat white oil paint.

Hang muslin as wallpaper with regular wallpaper paste that has previously been strained to remove any lumps.

When dry, apply coat of glue size. Over this any conventional enamel finish can be applied with remarkably beautiful results.

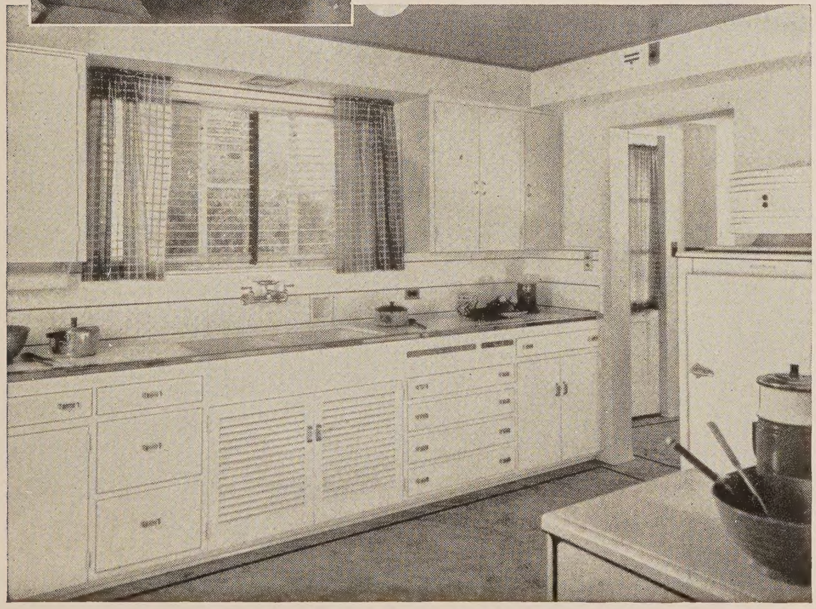
Plastic Paints—For plastic and water paints the surface should be sealed to prevent grain raise. Otherwise, the only precaution necessary is that they be applied in accordance with the manufacturer's directions. Products like Plasterez, and others, have proved highly satisfactory as finishes for Dri-Bilt with Plywood interiors.



Above are a few suggestions for joint treatment in plywood-lined rooms

Stippled Surfaces—Stippled surfaces over Douglas fir plywood may be obtained using a resin sealer or a coat of shellac after which a thinned prime coat is applied. For the final coat a heavy coat is put on without thinning. This paint should be stirred thoroughly because the heavy paint mixture settles. This coat should not be brushed, but spread on with a large wall brush. A stipple brush or a large sponge cut to a flat surface is used to develop the stippled effect.

Other finishes, such as wallpaper (see page 5 for specifications), are entirely practical and are widely used in many Dri-Bilt with Plywood homes. For various other plywood finishes see catalogs of paint manufacturers, (see Manufacturers' Index) and the catalog of Laux Sales Company.

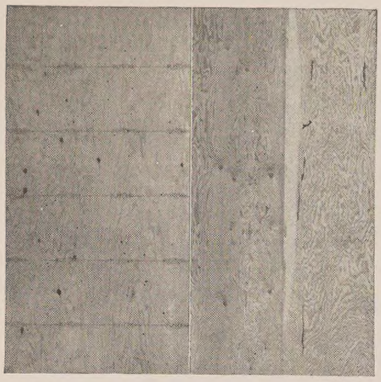


PlyPanel kitchen built-ins are now an accepted standard as shown in this California home

TRADE MARK

☆ PLYSCORD ☆

REG U S PAT OFF



(Left) Typical Plyscord face. (Right) Plyscord back. An unsanded panel, with face a practically solid surface except that six small open defects less than $\frac{3}{8}$ in. are permitted

This circular stamp appears on the face of all genuine Plyscord panels

Plyscord is an unsanded utility panel of unusual rigidity designed especially to withstand the rigorous service for sheathing on walls and roofs, and for sub-flooring.

It is an excellent utility panel on construction jobs. One face is plugged or patched to eliminate all open defects larger than $\frac{3}{8}$ in. across.

Sizes—

Width—32 in. and 48 in. Length—96 in. Thickness—$\frac{5}{16}$; $\frac{3}{8}$; $\frac{1}{2}$; and $\frac{5}{8}$ in.

Chief Uses—

Sheathing for walls and roofs and sub-flooring; backing for resilient or fibrous floor and wall materials; single use for concrete foundation walls and re-use for sub-flooring.

Advantages—

Superior rigidity and strength; quick, economical application; air-tightness; large size.

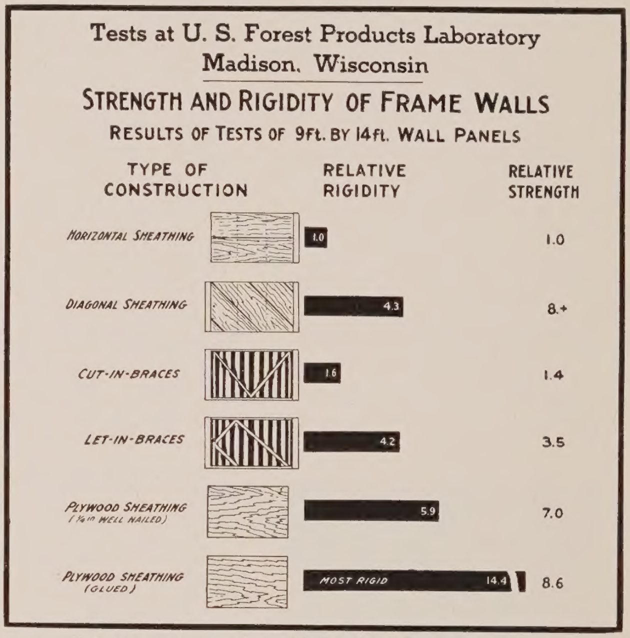
Recommended Thicknesses—

WALL SHEATHING (to be covered).

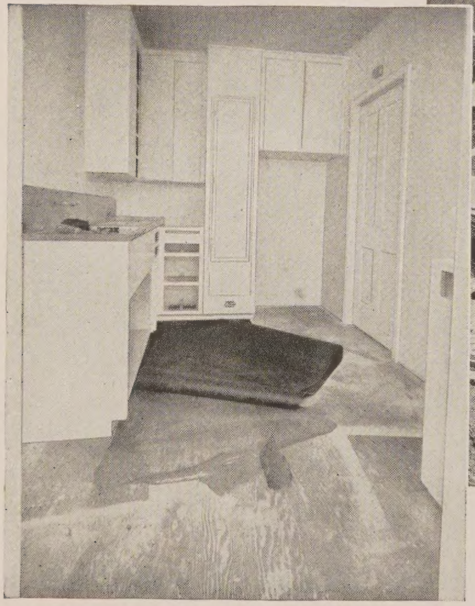
Panels $\frac{5}{16}$ in. thick, applied either horizontally or vertically provide 40% greater wall rigidity than diagonal bracing or sheathing (see chart on Page 9).

Shingles or siding may be applied direct to $\frac{5}{16}$-in. Plyscord.

Tests at the University of Washington by Prof. Grondal in 1937 and in 1939, after two years exposure of panels to weather, showed that a pull of 85 lbs. minimum was required to lift an 8-in. cedar shingle (one of a panel group) from $\frac{5}{16}$-in. Plyscord. This is about 10 times greater than force exerted by a cyclone.



Note that walls sheathed with Douglas fir for plywood are 6 times as rigid as those sheathed horizontally with conventional shiplap and 40% more rigid than those sheathed diagonally



(Above) Plyscord wall and roof sheathing being applied on a Portland, Oregon home. Richard Sundeleaf, Architect

(Left) The Plyscord grade makes an ideal base for linoleum, as shown in one of 1142 apartments of Wyvernwood Housing project, Los Angeles, Witmer & Watson, architects

RECOMMENDED THICKNESSES FOR PLYSCORD
ROOF SHEATHING
(Panels Lengthwise Across Rafters)

Roof load	Rafter spacing (maximum)	Thickness of Plyscord
20 lb./sq. ft.	20 in.	5/16 in.
	24 in.	⅜ in.
	30 in.	½ in.
	36 in.	⅝ in.
30 lb./sq. ft.	17½ in.	5/16 in.
30 lb./sq. ft.	21 in.	⅜ in.
	26 in.	½ in.
	33 in.	⅝ in.
40 lb./sq. ft.	16 in.	5/16 in.
	19 in.	⅜ in.
	24 in.	½ in.
	29½ in.	⅝ in.

SUB-FLOORS—Plywood sub-floors are desirable as a smooth, level working platform, as insulation, as protection against drafts from below, and to provide a horizontal diaphragm to resist earthquakes and high winds.

A 5/16 or ⅜-in. Plyscord sub-floor with joists 16 in. on centers, is entirely adequate for such purposes. The finish floor, of course, should be nailed to the joists.

Actually ¼-in. plywood has been used under a 13/16-in. fir flooring (as in a Tacoma High School annex built three years ago, where joists were 24 in. on centers, yet no difficulty of any kind resulted).

Most modern building codes do not require sub-flooring under a 13/16-in. wood strip flooring, since such flooring, if end-jointed over supports, has far greater strength than required for residences.

GENUINE
TRADE MARK
-PLYSCORD-
REG. U. S. PAT. OFF.
SHEATHING
D. F. P. A.
INSPECTED

Nevertheless ½ and ⅝-in. Plyscord are in wide use and are the most popular for sub-flooring.

The ½-in. panel meets all structural requirements. It will carry 100 lb./sq. ft. uniform load with a deflection of only 1/360 span for joists 16 in. on centers.

Finish flooring nails driven at about 45 degrees angle into ½-in. Plyscord penetrate nearly ¾ in. of close-grained Douglas fir wood.

Plyscord, ½ in. thick, covered with 13/16-in. finish flooring, deflected only 1/16 in. under concentrated loads of about 900 lbs., yet a grand piano imposes a load of only 275 lbs. per caster.

Plyscord, ⅝ in. thick, without any finish flooring, will sustain a load of 193 lb./sq. ft., with deflection of only .04 in. Residences are designed for a 40 lb./sq. ft. floor load.

Many builders find it advantageous to use ⅝ or ½-in. Plyscord to form smooth basement concrete walls, and to re-use the forms for sub-floors.

LINOLEUM BASE—Plyscord is an excellent base for resilient floorings but should be covered first with heavy asphalt felt, as recommended by flooring manufacturers.

Plyscord, ⅝ in. thick can be nailed directly on joists and used as a linoleum base. It is considered good practice to cut in headers between joists under panel joints.

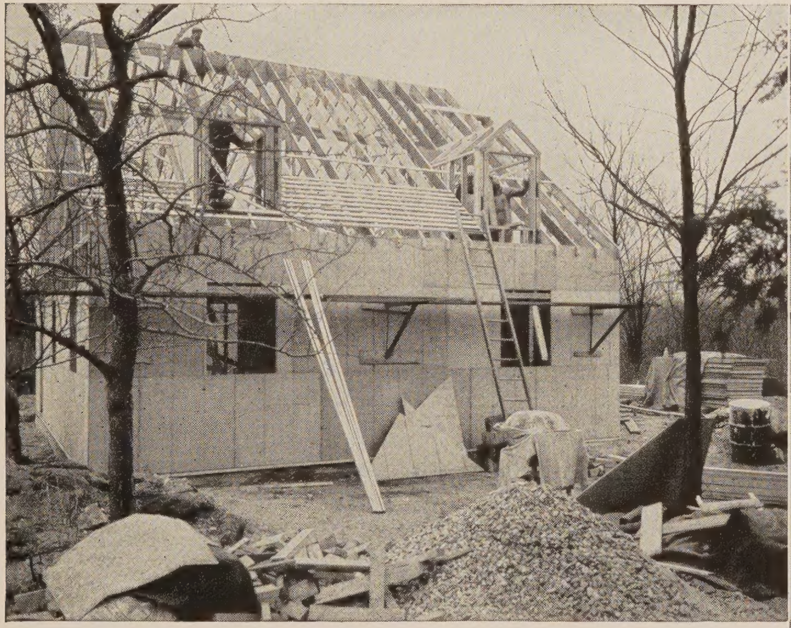
Plyscord ½ in. thick, however, should always have headers cut between joists to support sides of 4 x 8-ft. panels under resilient flooring.

Note: Plywall, the smooth sanded wallboard grade, ⅜ or ¼ in. thick can be used directly under linoleum without felt. It is particularly desirable over old strip flooring.

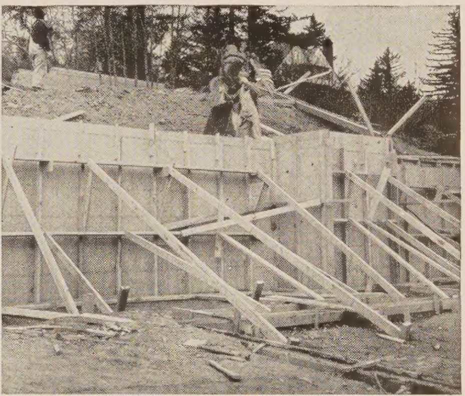
NAILING—

5/16-in. }
⅜-in. } Plyscord. Use 6d common nails.
½-in. }
⅝-in. Plyscord. Use 8d common nails.

Space nails not more than 6 in. at edges of panels and 12 in. on other bearings, when used as sheathing, or as a structural diaphragm.



(Above) Sheathing a Stamford. Connecticut, home with Plyscord



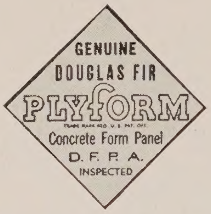
(Right above) Plyscord makes an ideal one-use Concrete forms. Can be later reused as subfloors

(Right below) Plyscord shown being used as a subfloor under tongue and groove finish floors

☆ PLYFORM ☆

TRADE MARK REG U S PAT. OFF

Typical PlyForm faces. Each face is similar in appearance to the face of a PlyWall Panel. Face plies must be ⅛ in. thick before sanding



This diamond-shaped stamp appears on the face of all genuine PlyForm panels

A special concrete Form Panel grade, mill-oiled and edge-sealed; manufactured with special highly water-resistant premium glues in strict accordance with U. S. Commercial Standard CS45-38.

All genuine concrete form panels carry the official Association Grade-mark stamp "PlyForm".

PlyForm is a multiple re-use form material, designed to produce the highest type of smooth, unblemished concrete surface for Architectural Concrete Buildings.

Sizes—Available in standard panels, sizes up to 48 x 96 in. and in larger sizes upon special order.

Thicknesses—½, $\frac{9}{16}$, ⅝, $\frac{11}{16}$, and ¾ in. The ⅝ in. and ¾ in. are by far the most popular. A ¼-in. PlyForm liner for formwork is also available for special jobs, curved surfaces and the like, where the size and design preclude an economical multiple re-use.

PlyForm, the concrete form panel grade of Douglas Fir Plywood has been accepted nationally as form material wherever Architectural Concrete is desired.

Plyform has been used on hundreds of monumental buildings, scores of Government Post Offices, modern bridges, and in fact, every type of concrete structure, including the lowly basement walls of residences.

A typical comment is that by William Lescaze, A.I.A., who says, "For exposed concrete finished surface best results are obtained by the use of Douglas Fir Plywood concrete form panels."

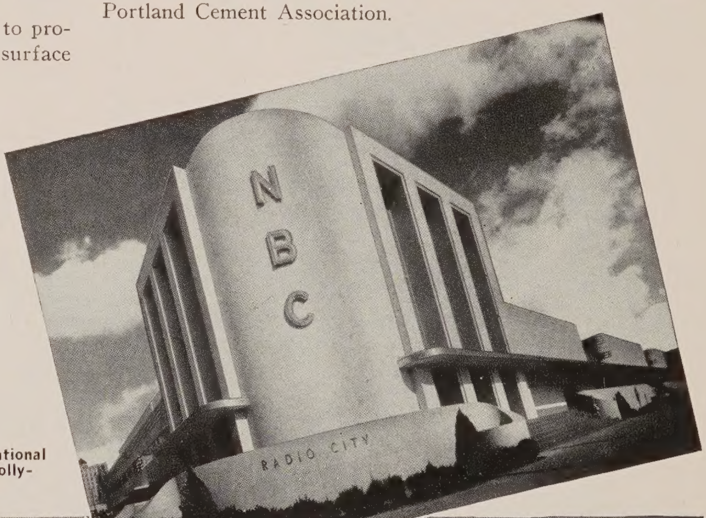
Thick PlyForm panels combine sheathing and lining in one rigid, smooth material.

Joints and fins are reduced to a minimum; the mill-oiling and edge-sealing give added protection and aid in producing concrete surfaces that require an absolute minimum of rubbing or finishing.

PlyForm is especially suited for large built-up forms, consisting of several 4 x 8-ft. panels over a lumber frame-work. Such forms will have from 6 to 10 times the rigidity of lumber-sheathed forms, as shown by tests at the U. S. Forest Products Laboratory.

Application—The panel thickness required depends upon the stud or joist spacing, and the rate of pouring, but in general, ⅝-in. panels over studs spaced 12 in. on centers (a load of 500 lb./sq. ft. will deflect only .04 in.) will be adequate. For other load conditions, see Deflection Charts, page 15.

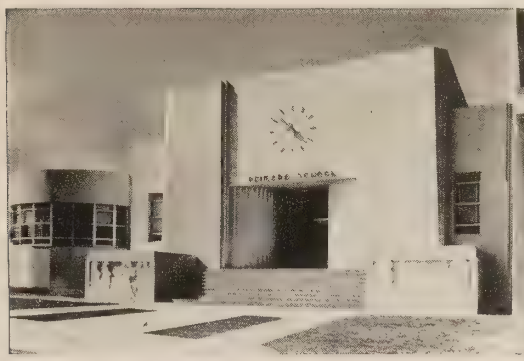
Joints—For highest type of Architectural concrete and smooth flush surfaces, all joints in forms should be pointed. Water putty, patching plaster, or a mixture of equal parts of tallow and cement may be specified for this, as recommended by the Portland Cement Association.



Smooth, finless concrete surface of National Broadcasting Company's Studios in Hollywood, formed against PlyForm

I. Magnin & Company, Los Angeles, all surfaces except the flutings in the pilaster were formed against PlyForm.
Hunt & Chambers, Architects

Another beautiful concrete building formed with PlyForm, the Douglas fir plywood concrete form panels. Lane-Wells building, Los Angeles.
W. E. Mayer, Architect



Elementary School, Tupelo, Mississippi. Architects, Overstreet & Town. Exposed concrete formed with PlyForm

Note difference between concrete formed against PlyForm and that formed against ordinary sheathing at McChord Field Air Base

GENUINE
DOUGLAS FIR
PLYFORM
Concrete Form Panel
D. F. P. A.
INSPECTED

Reproduction of PlyForm grade mark stamp

Nailing—Nails for forms should be as small and as few as practicable. Use nothing larger than 5d nails for panels up to ⅝-in. thickness, and 6d nails for 11/16 or ¾-in. panels.

Plywood form liners, ¼ in. thick are applied with 2d nails.

Table of Radii of Bending Panels

¼ in. lengthwise, minimum radius 24 in.
¼ in. crosswise, minimum radius 15 in.
⅜ in. lengthwise, minimum radius 54 in.
⅜ in. crosswise, minimum radius 36 in.
½ in. lengthwise, minimum radius 8 ft.
½ in. crosswise, minimum radius 6 ft.
⅝ in. lengthwise, minimum radius 10 ft.
⅝ in. crosswise, minimum radius 8 ft.
¾ in. lengthwise, minimum radius 12 ft.
¾ in. crosswise, minimum radius 10 ft.

Reverse molds are easily nailed to PlyForm which holds nails well and requires no boring for insertion of even small brads.

PlyForm is suited for all types of Architectural concrete, whether designed for unbroken plane surfaces or intricate moldings.

The following paragraphs are quoted from a single issue (August, 1939) of Architectural Concrete, the house organ of the Portland Cement Association, devoted to better concrete construction:

"A smooth texture was desired for the finish of most exposed surfaces, and this was accomplished by the use of *plywood forms*"—H. L. Cheney, A.I.A., Architect, U. S. Procurement Division, describing Post Office at Miami Beach.

"Walls of the entire building were formed against Plywood. . . . Plywood panels, fabricated in sections 18 ft. high, were hoisted into place."—U. S. Post Office at Northampton, Pa., designed by Procurement Division.

"Walls were cast against *Plywood,* with the 48 stars in the coping precast and *set into* the forms."—U. S. Post Office, Martinez, California.

"No attempt was made to surface the walls, hence the finish is that of the forms which . . . was *Plywood.*"—Hampton, Iowa Power Plant.

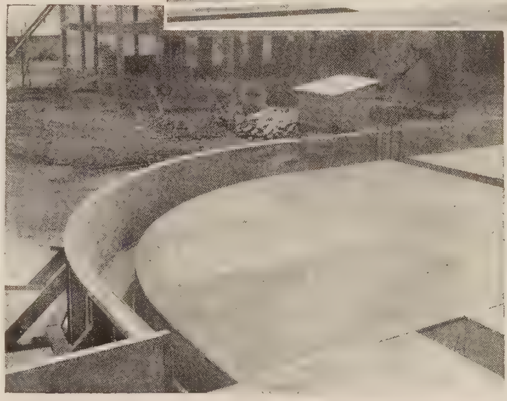
"All exterior forms were made of ⅝ *Plywood.*"—Norman Mayer Intern's Home, New Orleans. Weiss, Dreyfous and Seiferth, Architects.

"Exterior concrete walls were formed against *Plywood.* The forms were required to be built in such a manner that when they were removed, the finished concrete surfaces were smooth and beautiful in appearance."—Hospital group in Oregon, by J. E. Tourtellotte, Architect.

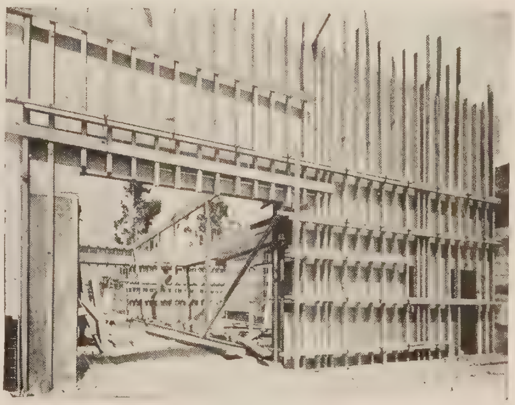
"Plywood forms were used, the panels being arranged systematically so the effect would be pleasing in the event the joint lines should eventually be discernible."—Two warehouses for Heinz, C. A. Hahn, Engineer. The Austin Co., Contractors.

For more complete data on *PlyForm* send for free Association booklet, "Concrete Form Panels."

Close-up of I. Magnin & Company building, showing interesting detail of panel forms



Curved forms are easily built with Plyform concrete form panels as shown here during construction of barracks at McChord Field, Tacoma, Washington. Result was a smooth curved concrete surface



Multiple reuse of PlyForm may occur on the same building or on different projects

☆ EXT-DFPA ☆

TRADE MARK REG U S PAT OFF. PEND

Exterior grade is available in the several appearance grades described under PlyPanel, PlyWall and PlyScord

EXT.-D.F.P.A.

This mark is edge-branded on all panels of genuine Exterior grade Douglas fir plywood suitable for permanent exterior exposures

A special type of Douglas fir plywood for permanent outside service. It is made by the hot-plate synthetic resin process (with a manufacturer's guarantee against ply separation) in strict accordance with rigid requirements of the U. S. Commercial Standard CS 45-38, for Douglas fir plywood.

Exterior is available in several appearance grades (Sound 2 Sides, Sound 1 Side, and sheathing or industrial; also in Good 1 Side and Good 2 Sides upon order), all of which may be identified as Exterior type by means of the grade-mark (EXT-DFPA) on edge of each panel.

Sizes and Thicknesses—Standard Exterior panels are made in even foot lengths of 4, 5, 6, 7 and 8 ft.; and in widths of from 12 to 48 in. in even 2-in. increments.

Thicknesses are from $\frac{3}{16}$-in. sanded to $1\frac{3}{16}$-in. rough in $\frac{1}{16}$-in. increments. Larger dimensions are available upon order up to 8-ft. widths and 16-ft. lengths. Exterior is also made in siding patterns for conventional house designs. Thick panels for gusset plates and similar uses are available on order.

A Few Important Uses—

Permanent exteriors for buildings of all types.
Signboards and highway signs.
Boats of all types.
Refrigerator cars and boxes; milk houses.
Gusset plates for bolted and ring-connected joints in trusses for roofs and bridges.
Lawn furniture.
Auto trailers.
Bus bodies and floors.

⅜-in. Exterior plywood is accepted by FHA for house siding and other permanent exposures, provided it bears Association grade-mark "EXT-DFPA," and is applied in accordance with their specifications (16-in. stud centers; edges sealed with white lead paste, etc.).

Exterior is widely used for all types of permanent exposures. It offers excellent opportunities to the skilled designer in storefront and building modernization.

Exterior Douglas fir plywood is suitable for exteriors since it is impervious to moisture. It is available in panels or in siding pattern

Exterior plywood panels, installed vertically on a Portland, Oregon, house. For this use ⅜ in. or $\frac{7}{16}$ in. thickness is recommended

"Exterior" Douglas fir plywood was specified by the Army Air Corps in the emergency barracks building program undertaken at eleven air fields in August, 1939. Economy, speed of erection, and permanency constituted the basic reasons for its selection over other materials.

More than three million feet were used in the huge plane and curved wall areas of the Treasure Island Fair Buildings at San Francisco.

Finishing—Standard lead and oil finishes may be applied. The Exterior plywood at the New York Fair's plywood house, designed by A. Lawrence Kocher, AIA, called for mill resin-sealed panels; one coat of thin white primer (6 lbs. white lead undercoater, 3½ qts. pure turpentine, 1 pt. linseed oil) applied smooth, and steel wooled when dry. Finishing was done with a coat of clear white shellac, and one coat of lacquer.

Textured finishes, using high grade resin-base paints, with asbestos and silica, such as Rezitex, have also proved popular.

Boats—Most severe of all uses occurs in the thousands of Douglas fir plywood boats, dinghys, skiffs, sail-boats and cruisers, built during the past five years. The demand for "Exterior" plywood in boat construction is increasing continually, a sound testimonial to the adequacy and permanency of this "waterproof" material.

Advantages—Exterior Douglas fir plywood combines the structural superiority of standard moisture-resistant plywood with a strictly waterproof bond between the plies (guaranteed by the manufacturer) that renders it suitable for permanent exposure to weather or water. This bond of synthetic resin, hot-pressed, is similar to Bakelite in its action.

Every Exterior panel carries the Association grade-mark of quality, "EXT-DFPA," as set forth in U. S. Commercial Standard CS 45-38, promulgated by the National Bureau of Standards, U. S. Department of Commerce.

Exterior paneling applied horizontally is being widely used for modern streamlined exteriors of residences, service stations, stores, warehouses and other structures.

Application—Exterior is preferably applied with non-corrosive nails. By using 6d common, spaced 6 in. at edges and 12 in. elsewhere, the Exterior panels provide 40% greater wall rigidity than 1-in. diagonal sheathing or bracing, as well as an airtight, comfort-giving surfacing.

Thickness—A minimum thickness of ⅜ in. (either 3 or 5-ply) is recommended for outside paneling.

☆ STRUCTURAL DATA ☆

Bending and Deflection—Compute I, moment of inertia, by considering only those plies having their grain direction parallel to the span.

TABLE OF MOMENTS OF INERTIA AND SECTION MODULI
GRAIN OF FACE PLIES PARALLEL TO SPAN

		I	S
¼"	PlyWall	.014	.112
5/16"	PlyScord (3 equal plies)...	.029	.186
⅜"	PlyScord (3 equal plies)...	.051	.270
⅜"	PlyPanel or PlyWall	.046	.245
½"	PlyScord (5 equal plies)...	.099	.396
½"	PlyWall or PlyPanel.......	.090	.360
⅝"	PlyScord (5 equal plies)...	.193	.618
⅝"	PlyPanel or PlyForm......	.167	.535
¾"	PlyPanel or PlyForm......	.250	.667
1"	7 plies @ 1/7 in.............	.713	1.426

Use E, 1,600,000 lbs. per sq. in. (as for Douglas fir). A unit fibre stress in bending of 1750 lbs. per sq. in. is recommended as conservative for PlyScord Sheathing.

This may be increased to 2000 lbs. per sq. in. for panels with dense Douglas fir faces (i.e., at least ⅓ summer wood). It may be noted that the presence of a patch in a 48-in. wide panel reduces the cross-sectional area available for tension only about 2 or 3%.

The modulus of rupture in bending on hundreds of test panels selected at random, varied from 8500 lbs. to 15,200 lbs. per sq. in.

Compression—Parallel to grain of face plies (short columns): A value of 1300 lb./sq. in. is recommended.

Only those plies with grain direction parallel to the force are considered as functioning.

A streamlined, modern appearance can be given old buildings when remodelled with Exterior Douglas fir plywood

More than 1,000,000 square feet of Exterior Douglas fir plywood was used in the construction of the new air corps barracks at numerous air fields, including Bolling Field, Mitchell Field, March Field and others

☆ NAIL BEARING ☆

Nail bearing is the vital property on which the effectiveness of any sheathing or diaphragm depends.

A ⅜-in. minimum edge distance is recommended for nailing. Note high values of Douglas Fir Plywood even after soaking.

AVERAGE TEST VALUES PER NAIL

Thickness of Plywood	Nail Size	Edge Distance	Force		Average ultimate bearing value in pounds per nail
			Parallel to grain	Perpendicular to grain	
5/16 in.	6d Com	⅜ in.	*		268 (252 to 300)
5/16 in.	6d Com	⅜ in.		*	302 (270 to 327)
5/16 in.	6d Com	¼ in.	*		137
5/16 in.	6d Com	¼ in.		*	202
5/16 in.	6d Com	⅜ in.	45 degree		321
5/16 in.	6d Com	⅜ in.	*		233 (223 to 250)
(Plywood soaked 5 to 24 hours, not delaminated)					
Plywood soaked until delaminated					
5/16 in.	6d Com	⅜ in.	*		189
5/16 in.	6d Com	⅜ in.		*	140 (108 to 162)
Fibreboards—Air Dried					Boards "A," "B," & "C"
½ in.	6d Com	¾ in.	..	..	132; 127; 95
½ in.	5d box	¾ in.	..	..	127; 117
½ in.	6d Com	¼ in.	..	..	102; 75

☆ INSULATION ☆

Plywood contributes to the insulation of a wall in two ways. First, plywood wall lining is air-tight and consequently creates a truly dead air-space. Second, plywood has the same coefficient of heat transmission as Douglas fir, e.g. 0.78 B.t.u. per inch.

Theoretically, 5/16-in. plywood plus an air space, has the same insulation value as 7/16-in. material sold as "insulation."

INSULATION VALUES (U) in B.t.u.'s
For Several Types of PLYWOOD Wall Construction

Inside Lining		Outside Wall	U
¼-in. Plywall	2 x 4-in. studs and air space between	5/16-in. PlyScord Building Paper Siding	.293
⅜-in. Plywall	2 x 4-in. studs and air space between	5/16-in. PlyScord Building Paper Siding	.280
¼-in. Plywall	2 x 4-in. studs and air space between	5/16-in. PlyScord Building Paper Furring Strips Wood Siding	.232
¼-in. Plywall	½-in. Bat Insulation	7/16-in. Exterior Plywood	.183

Air-tight Dri-Bilt with Plywood construction increases room comfort, especially during windy wintry weather.

☆ CONDENSATION AND VAPOR BARRIERS ☆

Condensation in walls and roofs is easily prevented through the use of Douglas Fir Plywood, with 2 coats of asphalt paint on the back, or through the use of glossy-surfaced, asphalt-impregnated building paper weighing 50 lbs. per roll of 500 square feet underneath the panels. Used in this way, Plywood becomes a vapor barrier. This barrier when located on the warm side of the wall, resists the passage of moisture (in the form of vapor) before it has the chance to condense into water. Hence with this precautional barrier of plywood there is no hazard of water forming behind the interior wall finish.

☆ ACOUSTICAL PROPERTIES ☆

Douglas Fir Plywood partitions and walls compare favorably with other standard construction from the standpoint of sound insulation, but plywood has definitely superior sound deadening or sound absorption properties.

Tests on plywood recently conducted at the Riverbank Laboratories, Geneva, Illinois, by Dr. Paul E. Sabine show the following values for Sound Transmission:

Partition Construction	**Sound Reduction Factor** (Transmission Loss in Decibels)
1. ½-in. gypsum plaster on metal lath on 2 x 4-in. wood studs	33.2
2. Ditto on wood lath	33.4
3. ¼-in. Douglas Fir Plywood (test face of panel varnished) on 2 x 4-in. wood studs	31.1

Tests at the National Bureau of Standards showed the following:

	Average Loss in Decibels (256 to 1024 frequencies)
1. Single sheet of ¼-in. 3-ply plywood	22.4
2. Single sheet of ½-in. fibre board (A)	22.2
3. Single sheet of ½-in. fibre board (B)	21.0

Sound Deadening Tests at Riverbank Laboratories. Dr. Paul E. Sabine reports that the coefficients of sound absorption at different frequencies are as follows:

Coefficients
(at various frequencies)

	128	256	512	1024	2048
A. ¼-in. Douglas Fir Plywood on both sides of 2 x 4-in. studs (Face of test side varnished.) Test No. 39-44.	.31	.11	.14	.12	.10
B. Ditto, but with ¾-lb. deadening felt and wallpaper over plywood. Test No. 39-45.	.35	.18	.16	.11	.13

Note: Figures below are from "Official Bulletin of the Acoustical Materials Ass'n" June, 1939.

	128	256	512	1024	2048
Plaster, gypsum or lime, smooth finish on lath	.02	..	.03	..	.04
Ditto, rough finish wood paneling	.04	..	.06	..	.05
Linoleum, asphalt, rubber or cork tile on concrete floor	..	..	.03 to .08	..	..

COMPARATIVE RESISTANCE OF VARIOUS MATERIALS TO VAPOR TRANSMISSION
(From Tests at U. S. Forest Products Laboratory)

Material	Loss in grains per sq. ft. per hour
A. Plywood, ¼-in. Douglas fir, 2 coats asphalt paint	0.308
B. Plywood, ½-in. Douglas fir, 5-ply	1.920 to 1.975
C. Plywood, ¼-in. Douglas fir, soybean glue, plain	3.080 to 4.620
D. Insulating Sheathing, surface coated (asphalt both sides and aluminum paint on one side	2,190 to 3.050
E. Plaster-Wood lath	7.900
F. Insulated lath and sheathing-board type (½ and ¾ in.)	18.50 to 24.65
G. Plaster, fibreboard or gypsum lath	14.20 to 14.80

NOTE:

The lower the figure, the more effective the vapor barrier.

☆ DEFLECTION CHARTS ☆

These charts show deflection of Douglas fir plywood when acting as a simple beam, i.e., resting on only two supports, *without any nailing.*

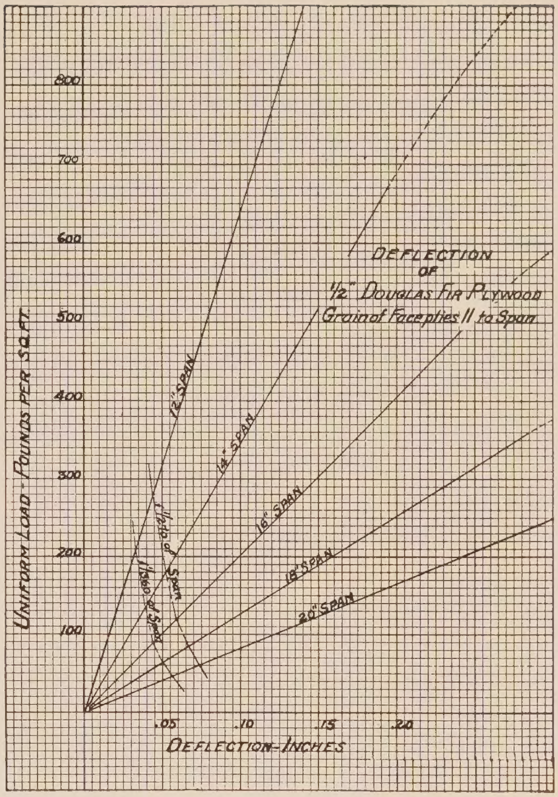
The charts are based on a comprehensive series of tests conducted recently at the Forest Products Laboratory of the University of Washington. The results are in accord with the theoretical deflections computed as tentatively recommended by the United States Forest Products Laboratory at Madison, Wisconsin.

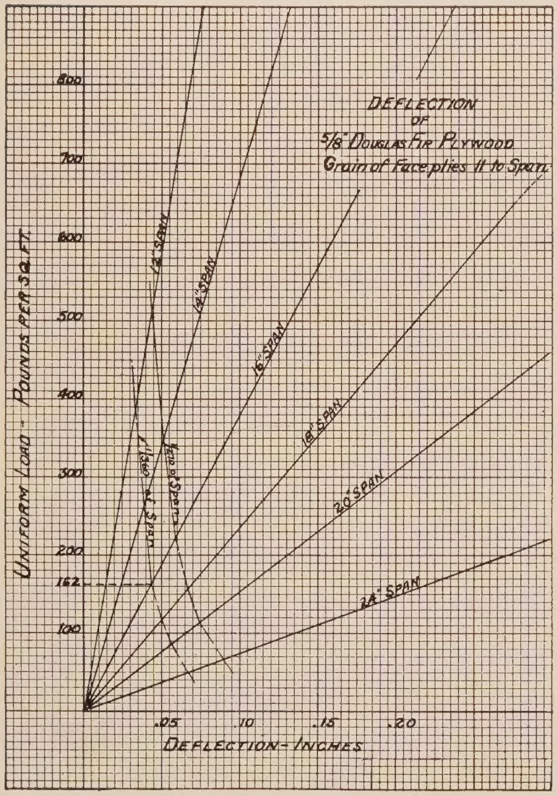
For convenience, lines have been added to show deflection of 1/360th and 1/270th of the various spans. For example, using ⅝-in. plywood over a 16-in. span, with deflection limited to 1/270th of span, as in most concrete work, a loading up to 221 lb. per sq. ft. may be used. If the supports are placed only 12 in. apart, the loading may be increased to 510 lb. per sq. ft.

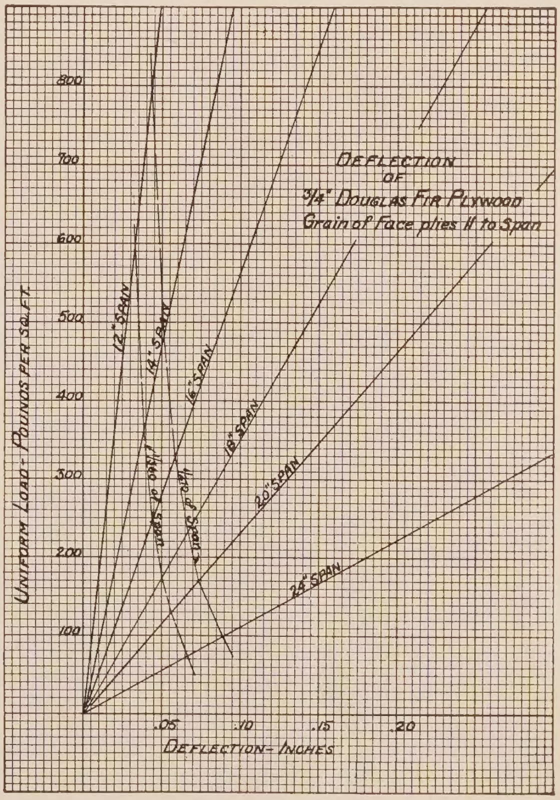
If load is continuous over two or more spans, the deflection will be approximately ½ that shown, and therefore, twice the load shown may be used.

The charts show the deflections of Douglas fir plywood when the grain of the face plies is parallel to the span, i.e., when panels are placed lengthwise across the supports. When panels are placed parallel to the supports, the loads causing any given deflection will be smaller than shown on the charts, as follows:

For ½-in. thickness, use 40% of load on chart;
For ⅝-in. thickness, use 50% of load on chart;
For ¾-in. thickness, use 75% of load on chart;
for any given span and allowable deflection.







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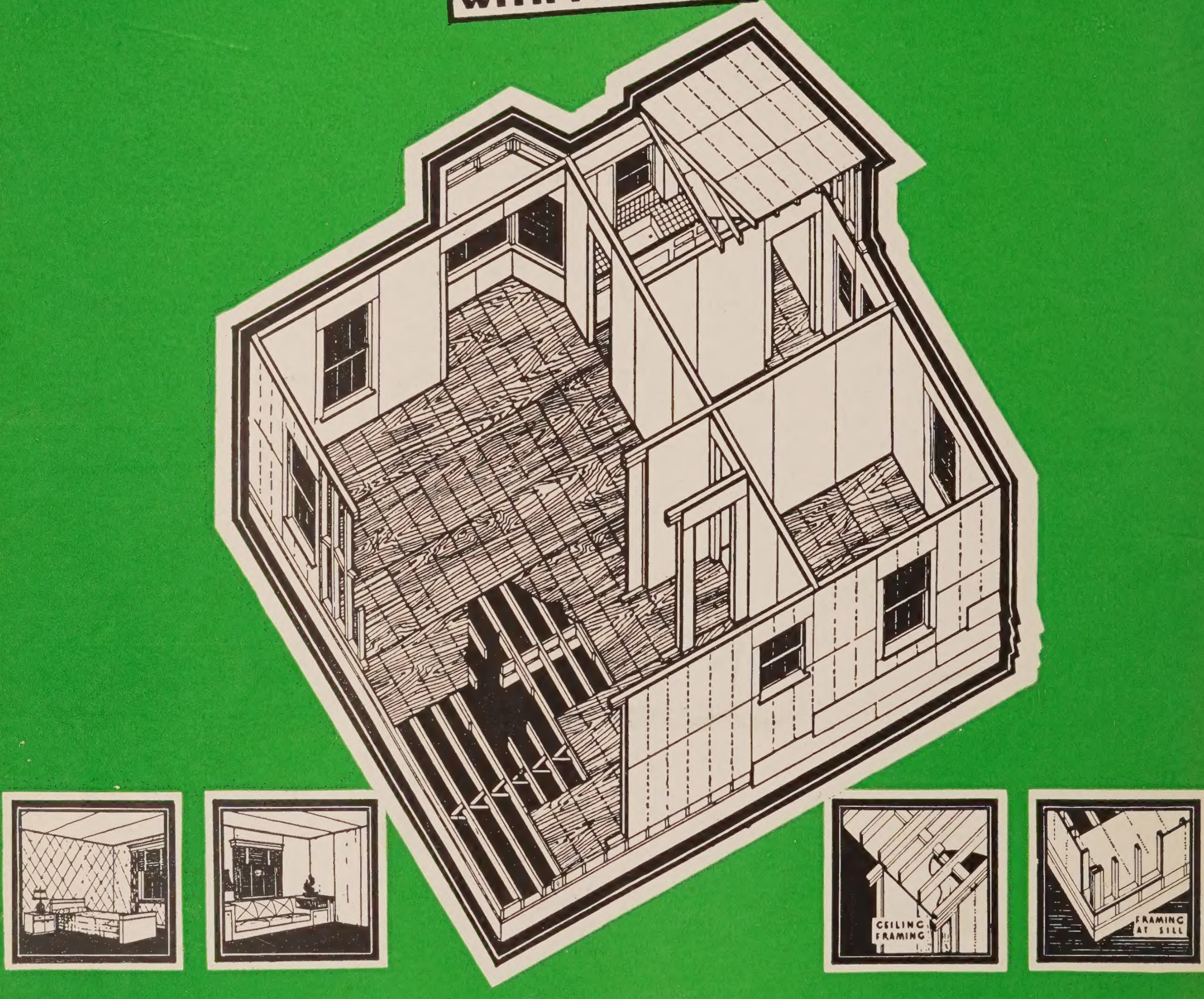

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